Poster

BONE STRENGTH INDEX AT TIBIA AND STANDING BROAD JUMP IN ADOLESCENT SWIMMERS

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KEY WORDS

Bone strength, Swimmers, Adolescents, peripheral quantitative computed tomography (pQCT).

INTRODUCTION

Measurement of broad jump is a simple, economical and non-invasive test that provides valuable information on muscular strength and power in youth lower limbs(1),and has been shown to be related to bone health(2). A recent review focusing on bone health in swimmers (3)showed that adolescent swimmers present lower bone mineral density than sedentary controls, and therefore might be at a higher risk of suffering bone fractures. Thus, the aim of this study was to ascertain whether a relationship between distance jumped in broad jump and bone strength indexesactually exists in adolescent swimmers.

METHODS

Peripheral quantitative computed tomography (pQCT) measurements were taken at the tibia of 73 adolescent swimmers (32 girls) from 12 to 18 years. Stress strain index (SSI), and resistance to fracture load (FRC_LD) were calculated in X and Y axis. Bone strength index (BSI) and polar strength strain index (SSIPol), which is an estimate of bone strength to bending and torsion were also calculated. Three broad jumps were performed by each participant and the distance jumped (cm) recorded by the same researcher being the best performance (i.e. longest distance) selected for the analyses. Age-controlled partial correlations were applied to identify possible relationships between bone strength variables anddistance in broad jump.

RESULTS

All bone strength indexesshowed medium correlations with distance in broad jump (from r=0.42to r=0.50, $p<0.05$).

CONCLUSION

Distance in broad jump, could be used as a predictor to determinate whether an adolescent swimmer might be at higher risk of bone fracture. This finding is of special importance due to the weaker bone that this population presents (3), making initial screening of extreme importance.

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